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FEDERAL-GRANT RESEARCH
at the
STATE AGRICULTURAL
EXPERIMENT STATIONS

Projects on

FOODS

Part 13, Section d

Consumer Quality
and Utilization

Agricultural Research Service
UNITED STATES DEPARTMENT OF AGRICULTURE

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The State Experiment Stations Division, Agricultural Research Service, U. S. Department of Agriculture, Washington 25, D. C., for use of workers in agricultural research in the subject-matter areas presented. For information on specific research projects write to the Director of the Station where the research is being conducted.

Issued July 1958

FEDERAL-GRANT RESEARCH
at the
STATE AGRICULTURAL EXPERIMENT STATIONS
Projects on
HOME ECONOMICS

Section d : Foods - Consumer Quality and Utilization

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INTRODUCTION

This compilation is one of a series providing information on State agricultural experiment station research supported by Federal-grant funds appropriated annually by Congress under authorization of the Hatch Act of 1887, as amended and approved Aug. 11, 1955, and Section 204(b) of the Agricultural Marketing Act of 1946. It is prepared for use by research workers in the subject-matter areas presented. Only that part of each State's research program supported by Federal-grant moneys is included.

In addition to the Federal-grant moneys, the State experiment stations receive some Federal support through cooperative agreements or contracts with the U. S. Department of Agriculture. Information on such research, along with other departmental research, is available in the Central Project Office, Agricultural Research Service.

A substantial part of each State agricultural experiment station's research is supported with moneys appropriated by the respective State or Territorial Legislatures and through other forms of private and public financing. Information on current agricultural research at the stations which is not financed under the Federal-grant program or through USDA cooperation can be obtained from experiment station directors.

The information given in the series of Federal-grant compilations includes the title and objectives of each Federal-grant project pertaining to the subject given on the cover. The identification of each project gives the department(s) conducting the research, the station number of the project, and the number of the regional project if it is a contributing project.

Relevant regional projects, if any, appear at the end of the compilation. States having projects contributing to regional projects are indicated. The Roman numeral (and capital letter) refer to the location in the summary of the contributing project title and objectives. The States are grouped into four major regions. These are designated NC-North Central, NE-Northeastern, S-Southern, and W-Western. The capital letter "M" following the letters for the region indicates regional marketing projects.

FACTORS AFFECTING TABLE AND CULINARY QUALITY OF FOODS

General

Idaho

Effect of Irradiating Russet Burbank Potatoes with Radio-Active Fission Products upon Their Storage and Market Qualities, Disease Prevention and Killing of Nematodes Contained within the Tubers. To determine (1) dosage of irradiation from fission products that will inhibit sprouting of Russet Burbank tubers; (2) effect of said treatment on taste, cooking and processing qualities, flesh color and greening of skin under normal retail conditions; (3) loss during storage due to rots, shrinkage, and sprouting compared to non-treated tubers; (4) temperature that will allow least moisture, sprout, and rot loss to treated tubers; (5) how long marketing can be extended by use of treatment and still receive consumer acceptance; (6) best time for using treatment to expect best results; (7) possible effect of irradiation of tubers in delaying expression of Verticillium wilt thru modification of dormancy; (8) if said dormancy can be broken by use of ethylene or other chemicals; (9) if Ditylenchus destructor can be killed by irradiation without injuring table quality.

Hort. 268

Mich.

The Effect of High Voltage Cathode Ray Ionizing Radiation in Certain Microorganisms, Molds, and Insects and on the Food Products in which They are Found. To (1) learn dosage of accelerated electrons needed to destroy grain and grain products infesting insects, their larvae, and eggs; (2) learn optimum effective depth of penetration of accelerated electrons into various products; (3) learn rate at which products can be irradiated; (4) learn cost of irradiating various products; (5) learn effect of ionizing radiations on palatability of whole wheat flour made from treated grain; (6) learn effect of ionizing radiations on enriched flour, on nutritive value of flour and palatability of bread made from flour; (7) study effects of storage after treatments on whole wheat and white flour; (8) learn if cathode ray treatment of wrapped and unwrapped and frozen and unfrozen meat will reduce or control undesirable color changes and quality deterioration; (9) learn effect of cathode ray treatment on palatability and nutritive value of meats; (10) determine minimum dosage of cathode rays needed to kill bacteria in milk; and (11) determine effects of cathode ray treatment of milk enough to kill bacteria on palatability and nutritive value of products.

Chem. Engin., Plant Path., Dairy Husb., Anim. Husb.,
Home Econ., Bact. 807

Wis.

The Effect of Marketing and Home Handling Practices on Selected Frozen Foods. Study effects of marketing and home handling procedures on eating quality and bacteriological quality of selected frozen foods.

Food and Nutr., Home Econ. 986

Cereals

Iowa

The Quality of Products Prepared from Cereal Grain: Factors Associated with Consistency of Starch Products.

Increase acceptance of products containing grain or grain-fractions by elucidation of factors affecting the quality of those prepared foods.

Home Econ. 1366

Kans.

The Influence of Environment on the Varietal Quality of Hard Red Winter Wheat. To determine the influence of environment, including meteorological and agronomic variables on the quality characteristics of a number of varieties of hard red winter wheat.

Milling Indus. 60

Kans.

Factors Which Influence the Colloidal Properties of Dough. To clarify the colloidal behavior of wheat flour doughs and to determine the influence of (1) the constitution of the gluten protein, and (2) the factors in the gluten environment which modify its properties.

Milling Indus. 200

Kans.

Increasing Flour Consumption through Improved Flavor in Bread. Develop baking methods which will improve flavor in bread.

Flour and Feed., Bact. ES 458

Mo.

Improvement of Soft Red Winter Wheat in Missouri. Testing the Flours from Regular Varieties and from Experimental Strains of Wheat for Their Adaptiveness to Different Culinary Purposes. To evaluate and compare baking qualities of flours milled from new varieties and experimental selections of wheat with known varieties, testing 18-20 flour samples.

Home Econ. 205-a

Mont.

The Milling and Baking Quality of Montana Bread Wheats.
To evaluate (1) the milling and bread-baking quality of wheat hybrids and varieties being tested; (2) effects of cultural practices and environmental factors on milling and bread-baking quality of wheat varieties; and (3) relationships between chemical and physical properties of wheat, flour, or flour doughs, and their milling or bread-making characteristics.

Agron., Soils 1079

N. Dak.

Wheat Protein Fractions and Baking Quality. To determine the cause of differences in baking quality between protein fractions from different hard red spring and durum wheats and to ascertain effect of proteolytic enzymes upon properties and relative distribution of these protein fractions.

Certif. Tech. 10-1

Pa.

Physical and Chemical Properties of Soft Wheat Flour and its Component Fractions as Affected by Sugars. To study (1) the influence of sugars on physical characteristics of an unfractionated soft wheat flour; (2) the influence of sugars on physical and chemical characteristics of crude gluten, prime starch, tailings, and soluble fractions of soft wheat flour in simple systems; and (3) the function of fractions of soft wheat flour and influence of sugars in a typical baked product.

Food and Nutr. 1319

S. C.

Consumer and Trade Acceptance of Riboflavin-Enriched and Other Rice. To study (1) trade acceptance of packaged rice, enriched with riboflavin to various levels and by various methods of application, coated with talc and glucose, slightly undermilled; (2) the consumer preference for cooked rice so treated.

Agr. Econ., Nutr. 423

Dairy Products

Ark.

Rancid and Bitter Flavor Defects in Arkansas Cream and Butter. To study certain causes of rancid and bitter flavors commonly found in Arkansas cream and butter, and to develop methods of control.

Anim. Indus., Vet. Sci. 172

Del.

The Detection and Removal of Garlic Odor and Flavor in Milk. (1) Study chemistry of garlic odor and flavor in milk; (2) develop rapid method for detection of such odors and flavors in milk; (3) devise a system whereby removal could be accomplished at farm, in tank truck, or in dairy plant.

Chem., Dairy Indus. 29 C

Ga.

Public Health Ordnances and Regulations as They Affect Quality, Consumer Acceptance, Cost of Production, Processing and Distribution of Milk and Dairy Products. Study variations in health regulations as they affect quality, consumer acceptance, cost of production, processing and distribution of milk and its products; and if relation exists between requirements in some public health codes, their methods of enforcement, and different interpretations given to their provisions by regulatory officials and actual protection of consumer; formulate a model regulation and inspection system for controlling sanitary qualities of milk and dairy products for inspection procedures.

Agr. Econ., Anim. Indus. 325

Ill.

A Study of Chemical Changes which Occur During the Aging of Surface Ripened Cheese. To study the rate of hydrolysis of protein, carbohydrates, and fat in surface ripened cheese such as, limburger, munster, and brick, followed by learning the end products as they are liberated in the cheese during aging.

Food Tech. 50-347

Ind.

Changes Caused by the Action of Bacteria and Enzymes in Raw Milk at Low Temperature. To learn (1) rate of increase of bacteria in raw milk at 40°F; (2) principal source of contamination of raw milk by psychrophilic bacteria; (3) influence of milk lipase and of lipase produced by microorganisms on flavor and fat acidity of milk; (4) influence of holding raw milk at low temperatures on rate of coagulation and firmness of coagulum produced by action of rennet; and (5) effect of holding raw milk at low temperatures on rate of protein degradation by microorganisms and enzymes.

Dairy 703

Ind.

Quality Problems in the Distribution of Milk. To determine (1) bacteriological quality of milk delivered in the Lafayette area by companies in and outside of the area; (2) types of off-flavors most common in market milk and cause or causes of such off-flavors; and (3) influence of time, temperature and method of transportation on rate of development of bacteriological and flavor defects.

Dairy Husb., Agr. Econ. 759

Iowa

A Study of the Oxidative Deterioration and of Adulteration of Milk Fat and of the Total Lipids of Dairy Products.
Work on this project will cover the following objectives:
to (1) complete study of adaption of methods, normally used
for food fats, to milk fat; (2) attempt to correlate the
results of these methods applied to milk fat so that (a) storage
life of milk fat and butter may be predicted, (b) shelf-life
of products made from milk fat or butter may be predicted;
(3) determine whether or not short-time, high-temperature
keeping-quality tests indicate storage-life of milk fat or
butter at 40°F., or 10°F.; (4) attempt to determine if oxida-
tion processes are the same in different portions of the
same large lot of milk fat, when these different portions are
stored at different temperatures or the same reaction proceeds
at different temperatures, but at different rates; (5) apply
methods developed for milk fat to milk lipids, in a study of
oxidative deterioration of lipids in milk, cream, etc., and
(6) obtain information relative to types and amounts of
tocopherols in milk fat and edible vegetable fats, and from
these data, evolve procedures for qualitative and quantitative
estimation of adulteration of milk fat with fats other than
milk fat.

Dairy Indus. 1128

Ky.

Factors Affecting the Quality of Creamery Butter Made
in Kentucky. To learn effects of various grades and types of
churning cream on quality of resulting butter as measured by
organoleptic and chemical tests.

Dairy 405

Ky.

Relationship of Bacterial Types to Spoilage of Pasteurized
Milk Held at Certain Refrigeration Temperatures. Study relation-
ship of coliform, mesophilic, and psychrophilic bacteria to the
spoilage of pasteurized milk held at certain refrigeration
temperatures.

Dairy 408

Maine

Prevention of the Occurrence of Hydrolytic Rancidity in
the Milk Fat in Herd's Milk. To determine whether supple-
mentary feeding of the dairy with lipase inhibiting material
of nutritive and unobjectionable character, leading to pre-
vention of butterfat test reduction in held milk samples, is
economically feasible.

Anim. Indus., Home Econ. 21

Minn.

Factors Influencing the Melting Properties and Flavor Retention of Hard Cheese When Heat Treated. To (1) develop techniques to be used in measurement of melting properties of cheese, (2) develop and apply techniques to assist in measuring the ripening or degree of ripening of a hard cheese, and to correlate with organoleptic examination as to flavor, body and texture characteristics, as well as meltdown, (3) to explore possibilities of modification of manufacturing procedure in preparation of certain hard cheese and particularly Cheddar, in effort to improve melting qualities of ripened cheese, (4) modify manufacturing procedures of certain hard cheese in effort to learn if it is possible to prepare a cheese that will retain more cheese flavor after going through a cooking process such as is used in commercial cookery or in the home.

Dairy 1619

Miss.

A Study of the Factors Influencing the Market Grade of Southern Cheddar Cheese. To (1) measure any differences that may exist between southern and northern cheese, and (2) determine controlling factors which promote undesirable qualities in cheese.

Dairy HG-16

Vt.

Milk Flavors. To (1) determine incidence of rancid flavor in milk produced in Vermont; (2) determine degree of rancidity present at different times of the year, and in several areas; (3) endeavor to determine causes of spontaneous rancidity; and (4) develop methods of preventing or eliminating this objectionable flavor.

Anim. and Dairy Husb. 33

Wash.

The Effect of Changing the Fat and Nonfat Solids of Milk and Milk Beverages upon Flavor, Physical Appearance, Keeping Quality and General Consumer Acceptability of These Products. Evaluate flavor appeal, physical appearance, and keeping quality of milk and milk beverages adjusted to contain different amounts of fat and nonfat solids by addition or removal of cream, or addition of nonfat milk solids, evaporated milk, or water.

Dairy Sci. 1397

W. Va.

The Keeping Quality of Milk in Home Refrigerators. To determine (1) keeping quality of processed milk in refrigerators under normal conditions; and (2) frequency of milk deliveries necessary for good quality.

Dairy Husb. 11

Fruits and Vegetables

Ariz.

Lettuce Shipping Quality and Consumer Acceptability as Affected by Varieties, Growing Conditions and Packing. To find effect of varietal and growing differences on handling, storage, and transportation behavior and consumer acceptability.

Plant Path., Nutr., Hort., Home Econ. 308-A

Ariz.

Melon Shipping Quality and Consumer Acceptability as Affected by Varieties, Growing Conditions, and Packing. To find effect of varietal and growing differences on handling, storage, and transportation behavior and consumer acceptability.

Plant Path., Nutr., Hort., Home Econ. 308-B

Ark.

The Maturity of Peaches in Relation to Handling and Consumer Acceptance. To determine and set up guides for (1) harvesting peaches at various stages of maturity; (2) carrying qualities of peaches at various stages of maturity, under various treatments, for various type containers, shipping methods and distance to market; and (3) market and consumer acceptance for various stages of maturity and types of containers.

Hort., For. 354

Calif.

Pectin in Relation to the Soluble and Insoluble Carbohydrates of Immature and Mature Citrus Fruits. To (1) learn changes of pectin in relation to the soluble and insoluble carbohydrates of citrus fruits during growth and maturation, to understand more fully metabolic changes of the fruit in transit and storage; (2) study changes that occur in pectins of the peel of lemons during storage; and (3) determine physical and chemical properties of isolated pectins from mature citrus fruits in relation to their commercial values.

Plant Biochem. 1159

Colo.

The Effect of Various Fertilizers, Minor Elements and Soil Amendments on the Yield, Grade, Color, Cooking Quality and Keeping Quality of Potatoes. To determine the soil factors influencing skin color, tuber type, yield, size, and quality of red potatoes in the San Luis Valley and to study the effect of soil applications of different types.

Hort. 45

Conn.

Relation Between Conductivity of Apples and Flavor. To compare the conductivity at harvest of apples treated with different pesticides and to evaluate the flavor of the fruit by use of taste panels.

Ent. 316 (NE-15)

Del.

Chemical Changes that Occur in the Pectins of Fruits and Vegetables in "Fresh Market" Channels. To (1) establish chemical changes which occur from time fruits and vegetables are harvested until sold; (2) establish a physicochemical basis for the changes in quality which occur during marketing; (3) develop practical measurements and means of preserving quality in fruits and vegetables following harvest.

Chem. 27

Fla.

Maturity as Related to Quality of Tomatoes for the Fresh Market. To determine the effects of maturity on market quality of tomatoes and to improve the methods of grading for maturity.

Home Econ., Veg. Crops 641

Fla.

Relationship of Heredity to the Ripening Performance of Tomatoes. To determine differences in ripening behavior and marketability of varieties and strains of tomatoes during the ripening processes.

Veg. Crops 642

Fla.

Effect of Climatic Factors on Insecticide Residues on Vegetable Crops. Learn extent to which climatic factors as sun, rain, and wind affect insecticidal residues on certain vegetables.

Ent., Hort. 746

Fla.

Evaluation of Factors Determining Celery Quality. Determine relationship of objective measurements of celery quality to subjective evaluations and study influence of storage conditions on celery quality.

Tech. and Nutr. 808

Ga.

Quality and Nutritive Value of Cantaloupes as Affected by Levels of Nitrogen Fertilization and Irrigation. Learn effects of irrigation and level of nitrogen fertilization on chemical composition and edible quality of cantaloupes.

Home Econ., Hort. 80 (S-32)

Ga.

Improvement of Sweet Potato Varieties for Table Purposes Through Breeding. To obtain, thru breeding or introduction, sweet potato varieties which have superior yielding ability, higher market and nutritive values, greater disease resistance and better adaptability for specific uses than presently known kinds.

Hort. 89

Idaho

Specific Gravity, Mineral Composition, and Sloughing of Potato Tubers. To learn (1) if specific gravity and starch content of potato tubers are correlated with ash content; (2) if sloughing of cooked tuber tissue is correlated with total ash content of fresh and cooked tubers; (3) if amount of individual mineral elements, particularly calcium and magnesium, is correlated with specific gravity, starch content or sloughing losses; (4) distribution of total ash and individual elements within various portions of tuber.

Agr. Chem., Agron. 210

Ind.

A Unit Color and Defect System for Purchasing Cannery Tomatoes. To (1) determine applicability of Purdue Sampling Table and Purdue Color Meter to improvement of precision in assigning U. S. grades to tomatoes for processing; (2) establish a unit of color and a unit of defect, and using them, develop a method to buy and sell tomatoes on unit color and defect system; (3) ascertain advantages to grower and canner by such a system of pricing tomatoes; and (4) make improvements possible in devices used.

Hort. 710

Kans.

The Comparative Quality and Nutritive Value of Market Fresh and Commercially Frozen and Canned Vegetables. To (1) compare quality, nutritive value, and cost of fresh, frozen and canned vegetables when purchased on local market; (2) determine if there are indications of seasonal differences in quality and nutritive value of these vegetables as purchased; and (3) compare, when possible, the quality and nutritive value of market fresh and commercial frozen products with home grown fresh and frozen ones.

Home Econ. 363

Ky.

The Interrelationship of Hormones and Nutrients and Their Effect on the Production and Quality of Tomatoes. To learn (1) interrelationship of hormones and nutrients in set and quality of tomatoes, and (2) if proper balancing of nutrients will not induce set under adverse conditions as efficiently as do hormones.

Hort. 551

Ky.

The Effect of Environment on the Interaction Between Borated Hormone and Dextrose Foliar Sprays and the Levels of Nitrogen, Phosphorous, and Potassium in the Plant in Relation to Yield and Quality of Tomatoes. To (1) investigate interaction between borated hormone and dextrose treatments of nitrogen, phosphorous, and potassium levels in the plant as evidenced by tissue tests; (2) learn if interactions found above are the same under glass, under plastic and in the field; (3) learn effect of seasonal light intensity through the year on interactions of treatments.

Hort. 559 (S-32)

Ia.

Comparing Promising Sweet Potato Seedlings with Standard Varieties for Market and Industrial Uses. To develop a variety that is superior to Porto Rico, determining optimum conditions for production of promising material that is now available and working with table varieties in preference to industrial use varieties.

Hort. 417

Ia.

Marketing Louisiana Peaches with Special Emphasis on Tree-Ripened Fruit and Prepackaging. To (1) determine best methods for harvesting and effect of various factors on quality of fruit on reaching retail store; (2) explore field of containers, and (3) determine consumer preference.

Hort. 578

Maine

Palatability of Maine Foods. To (1) study quality of fruits and vegetables adapted to soil and climate of Maine, emphasizing seedlings and new varieties developed for Maine; (2) investigate palatability of fresh, stored, and processed Maine vegetables and fruits relative to physical or chemical measurements of quality; and (3) study effects of additives and effect of packaging during storage on flavor of foods.

Agron., Agr. Econ., Ent., Plant Path. 26

Mass.

The Effect of Handling, Processing and Chemical Treatment on the Shelf-Life and Quality of Fresh Vegetables. Develop parsnips and onions to ensure adequate shelf-life and optimum quality.

Food Tech. 132

Mass.

Control of Insects on Cucurbits in Relation to Yield and Quality. To develop an effective, safe, economical program of pest control on cucurbits which will permit production of large yield of pest-free fruit without impairing its taste, texture, appearance, keeping or processing qualities.

Ent., Food Tech. 55 (NE-15)

Mich.

Post-Harvest Physical and Chemical Changes in Fruits and Vegetables in Relation to Quality. To (1) ascertain effects of maturity, pre-harvest chemical treatments, topping methods, and curing temperatures on such quality factors as firmness, water loss and dry matter content of onion bulbs and on the color, thickness, and tightness of the outer scales; (2) learn chemical constitution of principle or compound causing bitterness and devise methods for its deterioration, and measure quantitatively the effect of various handling and storage treatments on occurrence, development or disappearance; and (3) to learn nature of enzymatic and biochemical changes associated with flesh softening of strawberries, and peaches, internal breakdown of muskmelons and darkening and subsequent breakdown of stored or packaged asparagus; and evaluate physical and chemical treatments to retard these disorders.

Hort. 68

Miss.

The Effects of Varieties, Curing and Baking Time upon the Carbohydrate Content of Baked Sweet Potatoes. To learn (1) rate of enzymatic inactivation and effect of heat on firmness, texture, moisture, and nutritive content of baked sweet potatoes; (2) effects of curing 7 and 14 days prior to baking on sugars, alcohol insoluble solids, and moisture content of baked roots; (3) amylose and amylopectin content of starch found in raw and baked roots and their relation to firmness, texture, and moisture.

Hortl., Chem. HK-12, HF-4

N. J.

Chemical Factors Influencing the Cooking and Freezing Quality of Potatoes. To study (1) ways of increasing solids content of potatoes; (2) factors including total solids and certain chemical components which may cause poor quality.

Food Tech. 276

N. J.

The Action of Food Effluents on Quality in Fresh Foods During Storage and Shipment. To ascertain (1) commercial feasibility of packaging fresh asparagus in cellulose acetate and (2) the keeping quality of non-refrigerated fresh foods as influenced by various atmospheres as created by packaging materials which vary in permeability to effluents from the food.

Agr. Econ., Food Tech. 277

N. J.

A Study of the Influence of Pesticides, Fertilizers, and Other Agents on the Flavor of Fresh, Canned, and Frozen Foods. To study the influence of certain pesticides on flavor of fresh, canned, and frozen foods.

Food Tech. 286

N. J.

A Study of the Post-Harvest Improvement of the Marketable Quality of Fresh and Processed Food. To study (1) the prevention of fruit fly infestations developing on harvested crops such as tomato, pepper, peach, etc. from the time they leave the farm until processed or sold at retail; (2) methods for removal of dead bodies of insects adhering to vegetables and which have been killed by insect parasites and entomophagous fungi; (3) various aspects of pest problems of roadside fruit and vegetable stands; (4) the prevention of decay and contamination of harvested, perishable food caused by fungi and disinfection on the quality of the products so treated.

Food Tech., Ent., Chem., Plant Path. RM. c 702, ES 317

N. Mex.

Evaluation of Indices of Maturity in Apples. To (1) learn certain physical and chemical changes of maturing apples under New Mexico conditions, and (2) evaluate certain indices of maturity in order to learn correct time of harvesting fruits for maximum keeping quality.

Hort. 23

N. Y.

(Cornell)

The Oxidizing Enzyme Systems in the White Potato. To (1) study relationships between oxidative enzymes of potatoes and potato discolorations; (2) study location of such enzymes, their substrates, and inhibition; and (3) determine interrelationships of maturity of potatoes, degree of discoloration, and oxidative enzyme systems.

Food and Nutr. 110

N. Y.

Chemistry of Pectin and Pectic Enzymes. The mechanisms by which the pectic constituents of fruits change are unknown. Information is sought (1) on the mechanism of pectic transformation in fruits in vivo; (2) on the mechanism of the known pectic changes which occur when fruit tissues are macerated as in the manufacture of many food products. Tomatoes and apples are the chief present objects of this investigation.

Food Sci. and Tech. 2a

N. Y.

Relation Between the Presence of Oxidizing Enzymes and Keeping Qualities of Frozen Fruits and Vegetables. To determine presence of certain enzymes in fresh and processed plant materials and bearing of these enzymes on blanching requirement and keeping qualities of processed fruits and vegetables.

Food Sci. and Tech. 2b

N. C.

A Study of Certain Physiological Processes in the Sweet Potato in Relation to Curing and Storage. To study the rate of suberization and wound periderm formation in moist fleshed sweet potatoes under certain curing conditions; and to study the rate of respiration in relation to chemical quality and evolution of oxidizable volatiles during curing and storage.

Hort. HM-18

Ohio

Methods of Handling the Peach in Relation to Physiological Changes and Market Acceptance. To study effect of (1) harvest maturity on final dessert and processed quality of Hale Haven peaches, (2) storage temperatures at which fruits are held on their dessert and processed quality, (3) length or ripening at 70° to 75° after storage of fruit dessert and processed quality.

Hort. 50

Ohio

Respiration and Associated Factors as Indices in the Determination of the Period of Marketability (Shelf Life) of Fresh (Unprocessed) Fruits and Vegetables. To determine (1) the rate of respiration and weight loss of fresh fruits and vegetables under the conditions normally encountered in retail and wholesale distribution; (2) optimum conditions for storing and handling fresh fruits and vegetables through the study of various packages and controlled temperatures and humidity ranges; (3) maximum holding period for fruits and vegetables under various controlled conditions; (4) thru chemical analysis the changes which occur in fresh fruits and vegetables during the holding period in relation to reducing sugars, total sugars, fiber, or other measurable material changes; and (5) effect of the source of fresh fruits and vegetables (information on growing environment and early post-harvest handling) on the respiration rate and quality of these fresh fruits and vegetables.

Hort., Agr. Econ. 60

Oreg.

Enzymatic Reactions and Effects in Frozen Foods. To (1) develop a new simple test for enzyme activity in fruit and vegetable tissue to enable frozen food plant operators to determine more accurately vegetable blanching procedures and control browning in fruits; (2) determine quantities of known enzymes and speed of enzyme accumulation or loss in harvested fruits and vegetables to more fully understand problems of control; (3) develop new blanching techniques for processing frozen vegetables and new methods for controlling browning reaction in frozen fruits; and (4) determine enzymes in fruits and vegetables most commonly frozen in commerce, and investigate specific reactions causing deterioration of frozen products resulting in off-flavor, odor and color.

Agr. Chem. 146

Pa. The Influence of Various Fertilizers, Cultural Practices and Agricultural Chemicals on the Quality of Fresh and Processed Fruits and Vegetables. To determine the influence of (1) inherent and environmental conditions and cultural practices on quality of fresh and processed horticultural crops; and (2) various pesticides and other agricultural chemicals on flavor and quality of fresh and processed fruits and vegetables.

Agron. 1239

Pa. The Influence of Pesticides on the Flavor of Fruits and Vegetables. To study the influence of various insecticides, fungicides and herbicides on flavor of fresh, canned, and frozen fruits and vegetables.

Hort. 1332 (NE-15)

Pa. The Effect of Maturity on the Market Value and Quality of Frozen Vegetables and Fruits. Obtain information on state of maturity of fresh products used for processing as it affects the final quality of the frozen food prepared for market and consumption.

Food and Nutr., Agr. and Biochem. 1335-A

P. R. Shipping and Export Tests with Avocados. To determine (1) which of over 50 varieties and selected clones now considered highly promising are best for export purposes; and (2) most profitable shipping period and to develop maturity standards and packing and shipping techniques with the view of fostering establishment of an avocado export industry.

Agron. 58

P. R. Quality and Nutritive Value of Cantaloupes as Affected by Cultural Practices and Environmental Factors, Before Harvest and After Harvest. To study the effects of environmental conditions and cultural practices on the composition of cantaloupes at harvest and during storage.

Plant Phys. 117 (S-32)

R. I. The Influence of Pesticides on the Flavor of Fruits and Vegetables. To study (1) quantitative absorption and its relation to flavor of corn, broccoli and potatoes grown in soil treated with insecticides and (2) the effect on flavor of soil application of newly available parasiticides on selected vegetables and fruits to supplement findings of other cooperators in the project.

Plant Path and Ent. 612 (NE-15)

S. C.

The Causes and Prevention of Discoloration in Stored Pungent and Paprika Peppers. To (1) develop a quick test to predict color stability on aging; (2) develop a practical method of preventing discoloration; and (3) determine more important chemical reactions that take place in discoloration of cayenne pepper and paprika.

Chem. 45

S. Dak.

Production and Breeding of Early, Drought and Disease Resistant, High Quality Tomatoes for Home Use. To (1) determine best cultural practices to secure early tomatoes; and (2) to develop by hybridization tomato varieties which combine drought and disease resistance with earliness and high vitamin C content.

Hort. 49

Tenn.

Quality of Frozen Snap Beans as Affected by Methods of Transportation, Processing, Duration and Temperature of Storage. To (1) ascertain most suitable varieties and proper stages of maturity of green snap beans grown for the fresh market and for commercial processing; (2) find best preparatory treatment for blanching; (3) study quality of beans as affected by duration and temperature of storage; (4) conduct consumer acceptance studies of several varieties of beans prepared and stored under different conditions.

Chem., Bact., Agr. Econ. 77

Tenn.

Factors Affecting the Quality of Strawberry and Other Fruit Juice Concentrates. To (1) prepare strawberry and other fruit juice concentrates; (2) study such factors as temperature and time of heating of the berries and expressed juices; deaeration of the juices by inert gases; amounts and kinds of sugars used; addition of anti-oxidants; and kinds and varieties of fruit as they affect flavor and keeping quality; and (3) to determine by chemical analysis the nutritive value of fruit juice concentrates.

Chem. 82

Wis.

The Vitamin Content and Cooking Quality of Potatoes.
A. Culinary Qualities of Wisconsin Potatoes. To study (1) distribution of the vitamins in different parts of the tuber; (2) differences due to variety; (3) effect of storage conditions and of various processes of food preparation on concentration of the vitamins in potatoes; and (4) influence of various factors on their cooking quality

Home Econ., Genet. 671

Wis.

The Quality of Fresh and Processed Fruit as Affected by Orchard Sprays. To (1) determine effects of spray chemicals used in apple and cherry orchards on color, finish, texture, firmness, taste, and storage life of fresh and processed fruit, and (2) relate findings to preferences or needs of consumers and processors.

Dairy and Food Indus., Ent., Plant Path. 952

Wyo.

Testing Kinds and Varieties of Vegetables and Fruit in Wyoming. To (1) find disease resistant varieties of vegetables and fruits which will grow and produce high quality marketable yields in areas of different altitude in Wyoming; (2) test and evaluate new kinds and varieties of vegetables and fruits grown at a high elevation for adaptability, freezing and dehydro-freezing qualities; and (3) determine factors affecting quality and nutritive properties of processed vegetables.

Agron., Home Econ., Chem. 542

Meats

Calif.

The Effects of Hormones on the Growth and Fattening of Meat Animals. To learn (1) types of hormones best suited for increasing growth or carcass quality; (2) most effective dose; (3) influence of age, sex, and dietary conditions on effect of treatment; (4) mechanism by which hormones influence metabolic activities.

Anim. Indus. 1662

Calif.

Tenderness of Beef 1. Changes Due to Treatment During Cold Storage. To study (1) tenderness of beef after varying lengths of cold storage; (2) alternation in pattern of tenderness changes due to removal of muscles from carcass immediately after slaughter; (3) role of enzymatic activity in altering tenderness of beef.

Home Econ., Anim. Indus. 1668

Ind.

Improved Marketability of Meat by Preparing Precooked and Frozen Products for Consumer Use. To develop methods of pretreating and cooking of meat which will result in cooked, or cooked and frozen, products of good and uniform quality starting with meat of low quality, and to evaluate the economic feasibility of those methods and products for commercial marketing purposes.

Agr. Econ., Home Econ. ES 345

Iowa

Changes Occurring in Self-Service Meats Stored at Low Temperatures. To (1) investigate influence of microorganisms in accelerating discoloration phenomena associated with fresh and cured meats stored under conditions simulating those found in retail markets; (2) investigate possibility that enzymes are involved in the development of the undesirable colors associated with "greening" of meats; (3) evaluate predominant organoleptic changes which attend storage of meat at certain temperatures above and below the freezing point and to investigate the relationships that may exist between changes in color and/or microbiological populations and flavor; (4) investigate methods of packaging and/or incorporating additives (antioxidants, curing agents, antibiotics) which result in preservation of original quality of fresh and cured meats stored at certain temperatures above and below the freezing point; and (5) investigate the effect of wave length and intensity of light upon the microbiological, chemical, and organoleptic quality of fresh and cured packaged meats.

Dairy Indus., Anim. Husb., Home Econ. 1264

Kans.

Meat Investigations--Influence of Feeding Antibiotics on Carcass Quality of Hogs. To determine manner of growth and fat deposit resulting from feeding antibiotics to growing fattening pigs by making detailed carcass studies of hogs fed antibiotics.

Anim. Husb., Chem., Home Econ. 217

Kans.

The Effects of Implanting Stilbestrol in Feeder Lambs and Feeding a Stilbestrol Pre-Mix to Feeder Lambs upon the Quality and Palatability of the Carcass. Obtain information regarding body changes when stilbestrol is implanted in or fed to feeder lambs.

Anim. Husb., Chem., Food and Nutr. 423

Kans.

The Relation of Packaging Material to the Keeping Quality of Frozen Pork. Obtain specific information on merits of different packaging materials.

Anim. Husb., Chem., Agr. Econ., Home Econ. 424

Ky.

The Effect of Smoking and of Smoking at Different Temperatures on the Shrinkage, Rancidity, and Palatability of Dry-Cured Hams. Compare effect of smoking, and of smoking at different temperatures, on shrinkage, rancidity, and palatability of dry-cured hams that will be aged under constant controlled temperature and humidity.

Anim. Indus., Agr. Econ. 1008

Minn.

Preparation and Preservation Factors in Relation to the Nutritive Value and Palatability of Meat. To study (1) the effect of different methods of cooking and the effect of reheating upon the vitamin content of meat; and (2) to determine the factors which the homemaker must take into consideration in order to have meat of good quality when preserving by freezing storage.

Home Econ. 2003

Mo.

The Tenderness of Meat as Related to Tissue Components, Genetic Factors and Ante-Mortem and Post-Mortem Treatment. To study (1) tissue components responsible for variations in meat tenderness; (2) influence of genetic factors, stress and post-mortem environment on muscle composition and tenderness; (3) methods to evaluate effects of breeding, management, processing, and cooking on meat tenderness.

Anim. Husb. 327

N. Dak.

A Comparison Between Synovex, Orally and Sub-Cutaneous Administered Stilbestrol and Terramycin for Fattening Lambs. To study (1) the effect of stilbestrol and Synovex on gain and feed utilization; (2) the effect of treatments on carcass quality and yield; (3) the synergistic effect of terramycin with growth stimulants and (4) the difference between hormone-like growth stimulants on feed lot lamb losses.

Anim. Husb. 7-5

S. C.

The Effect of Feeds on Color and Firmness of Beef Fat. To learn (1) effect of green forage and subsequent dry lot feeding on carotene and xanthophyll content (color) of beef fat, color of lean, firmness (iodine number) of beef fat; (2) rate of carotene and xanthophyll depletion during dry lot feeding; (3) rate of change of unsaturated fatty acids (firmness) during dry lot feeding.

Anim. Husb., Agr. Econ., Vet. Sci. 80

Tenn.

Ripening of Beef from Cattle Produced under Different Feeding Methods as Related to Palatability, Tenderness and B-Vitamin content. Study (1) flavor, tenderness, and vitamin B-complex Content of beef from cattle finished mostly on grass and effects of various degrees of ripening on flavor, tenderness, and vitamin B-complex content of beef; (2) if there is an optimum degree of ripening for given grade of beef which will make best quality meat, considering flavor, tenderness and vitamin B-complex content; and (3) measure cooking effect on B-complex.

Home Econ., Anim. Husb., Agr. Econ. 67

Tex.

Characterization of Eating Quality of the Meat from Individual Animals. To characterize (1) eating quality of meat from individual animals of known history by using more than one cut and more than one method of cooking; and (2) eating quality of cooked and raw meat from individual animals by associating eating quality with variations in collagen content, amino acid end-groups, and histological structure.

Home Econ., Biochem., Nutr. 941

Utah

The Effects of Residues of Newer Insecticides on Health. To determine (1) under controlled conditions if insecticide residues appear in human foods of animal origin in toxic quantities, when farm animals consume feeds containing residues of endrin, heptachlor and other new insecticides; (2) the effects of residues on calves fed milk from cows which have been fed insecticide hay or known amounts of insecticides mixed with feed; and (3) histological changes in tissues of various species of animal when fed different insecticides.

Anim. Husb., Chem., Dairy Indus., Plant Indus., Vet. Sci., Zool., Ent., 424

Wash.

Factors Influencing the Desirability and Nutrient Content of Meat and Meat Animals for Human Consumption. To study effects of (1) genetics, nutrition, and other factors on carcass quality of meat animals and on quality and nutrient content of meat; and (2) storage, processing, and preservation on quality, nutrient content, physical structure, and economic value of meat and meat products.

Anim. Husb. 1161

Wash.

Identification of the Components of Flavor in Lamb and Mutton and Application of this Information Toward Increased Utilization of These Meats. To (1) investigate components of flavor of fresh and cooked lamb and mutton and their intensity by use of chemical, physical, and sensory techniques of identification; (2) study the effects of method of cookery on flavors; and (3) study the effects of breeding and management on the quality of lamb and mutton.

Home Econ. 1375

Wyo.

The Biochemical Changes Affecting Quality in Stored Packaged Meats. To study (1) the influence of constant and fluctuating storage temperatures on quality of beef and lamb; (2) chemical and biochemical changes causing deterioration of quality of beef and lamb during storage; (3) the application of information from above to develop new preservation principles.

Agr. Res Chem., Anim. Prod., Home Econ., Vet. Sci. 667

Poultry and Eggs

Colo. The Influence of the Color and the Amount of Carcass Fat on the Market Grades of Dressed Turkeys. To (1) study indirect methods for measuring the amount of fat on turkey carcasses and develop methods of measuring carcass fat color; (2) correlate color and amount of fat found in turkeys of known nutritional background with the grade given these turkeys; (3) study variation in color and amount of carcass fat marketed commercially in area; (4) determine consumer preference for color and quantity of fat in frozen turkeys; and (5) correlate relative roasting quality of frozen turkeys with consumer preference.

Poul. 54

Ind. Extending the Shelf Life of Fresh Dressed Poultry. To study (1) the effect of various fungistats and fungicides on the development of yeasts; and (2) storage life which can be obtained by use of chlorinated water in chill tanks, in addition to antibiotics.

Poul. Sci. 775

Ind. The Effects of Processing, Holding (During Marketing) and Preparation for Consumption of Poultry Meat upon its Tenderness and Flavor. To determine the effects of various methods of processing, holding, storage, and preparation of poultry meat upon tenderness, juiciness, flavor, and other organoleptic properties.

Poul. Sci., Home Econ. 836

Ind. Quality Classification in Relation to Nutritive Value of Poultry Products. To study (1) the relation existing between grading factors and nutritive value of poultry products; (2) changes in nutritive properties of poultry products during time of marketing and (3) the effect of various processing and marketing techniques on nutritive properties of poultry products.

Poul. Sci. 961 (NCM-7)

Iowa

Effect of Pretreatments and of Type of Packaging Material on the Quality of Fresh and Frozen Broilers in Market Channels. To (1) investigate methods for extending the market life and/or maintaining the quality of poultry products in packaged form; (2) evaluate the efficiency and effectiveness of different types of packaging materials in maintaining quality of fresh and/or frozen poultry; (3) evaluate the practicality and effectiveness of pretreatments which might be used on cut-up poultry: 1. to minimize seepage of fluid from cut tissues of broilers packaged and sold fresh; and 2. to improve the acceptability of frozen birds; (4) investigate methods of controlling microorganisms associated with development of off-odor, slime and other manifestations of spoilage of ice-packed broilers and (5) evaluate predominant organoleptic and microbiological changes which occur during handling and storage of fresh and frozen poultry.

Home Econ., Poul. Husb., Bact. ES 304

Kans.

The Percent Shrinkage and Quality of Turkeys and Broilers in Market Channels. To investigate the percent shrinkage of dressed turkeys and broilers during dressing, storage, and cooking, in order to determine conditions under which most pounds of salable product may be produced.

Poul. Husb., Chem., Home Econ. 387 (NCM-7)

Kans.

To Develop and Improve Methods of Preserving Eggs or Egg Products and to Prevent Bacteriological or Physical Deterioration. To determine causes of deterioration of eggs and egg products during processing and storage and to develop means of increasing storage life, shelf life, and wholesomeness of these products.

Poul. Husb., Bact. 388

Ia.

Physiological Processes Involved in Seasonal Changes in Egg Quality. To study (1) the effects of controlled temperature and age of birds on egg shell quality, interior egg quality and production; (2) basal metabolic rate and alkaline phosphatase activity of blood and the effect of controlled temperature on these factors; and (3) the degree of association between egg quality measurements and basal metabolic rate or alkaline phosphatase.

Poul. Indus. 870

Maine

Factors Affecting the Shelf-Life of Pre-cut Packaged Poultry. To study (1) the role of microbiological populations and their relation to the storage life of pre-cut packaged poultry; (2) the effect of antibiotics and in plant chlorination on this problem; and (3) the effect of container and over-wrap on odor and deterioration of packaged product.

Food Prod., Chem. Engin., Pouls. 98

Mich.

Minimizing Quality Losses of Poultry Meat Products in Market Channels. To study (1) factors affecting the decline in poultry meat quality during processing and storage; (2) variations in initial quality and changes occurring in quality of meat obtained from chickens which had received newer feed ingredients; and (3) variations in initial quality and changes in quality of meat from chickens which had received dosages of commonly administered hormone substance and drugs.

Poul. Husb., Home Econ. 100 (NCM-7)

Minn.

Factors Affecting Quality Loss in Poultry Meat. 1. The Effectiveness of Methods of Killing, Bleeding and Scalding on Quality Preservation. 2. The Influence of Methods of Pre-Cooling and Freezing of Quality Preservation. To study (1) the influence of methods of killing on the extent of bleeding, ease of feather removal, appearance, and keeping quality of dressed and ready-to-cook poultry; (2) the effect of method of bleeding on blood loss; (3) the effect of amount of blood loss on appearance and keeping quality of both fresh and frozen poultry; (4) the influence of time and temperature of scald and use of wetting agents and other compounds on ease of feather removal, appearance and keeping quality and (5) the influence of methods of precooling and freezing on quality preservation.

Poul. 2309 (NCM-7)

Minn.

Factors Affecting Quality Loss of Minnesota Eggs in Market Channels. To (1) establish the degree of variability and extent of quality loss in shell eggs of known history; (2) study characteristics of an egg which enable it to better maintain its high initial quality in market channels; (3) obtain a measure of economic loss incurred by shippers, receivers, and other segments of the industry from failure of shell eggs to undergo a uniform and a minimum amount of change while in market channels; and (4) secure data on objective measurements of egg quality, sampling techniques, and prediction tests for keeping quality.

Poul. Husb. 2313

Minn.

A Study of Moisture Levels in Processed Poultry.

To (1) study effects of moisture level in processed poultry on cooking losses, yields of cooked edible meat, and palatability, (2) compare keeping quality of low and high moisture level birds, fresh and frozen; and (3) study factors affecting water absorption and retention by poultry during and following the chilling process.

Poul. Husb. 2314

Mo.

The Factors Affecting the Palatability and Nutritive Value of Poultry.

To study (1) loss of water soluble organic material due to processing, (2) the possibility of nutritive loss due to packaging materials and storage conditions, (3) the amount of heat labile vitamins, essential amino acids in raw meat and meat fried, roasted, or broiled; and (4) the palatability of poultry prepared by different processing methods and cooking procedures.

Home Econ. 314

Mo.

Methods of Processing Poultry for Commercial Precooked

Frozen and Canned Products. To (1) compare various cooking procedures for tenderness and cooking losses; (2) develop methods for cooling meat before boning to improve shelf life and wholesomeness; (3) study various cooling temperatures and time periods of boned, precooked meat for prolonged shelf life and low bacterial counts in finished, frozen or canned product; and (4) determine the effect of freezing temperature and time on tenderness, flavor, storage life, and wholesomeness.

Poul. 323

Mont.

The Comparative Value of Common Grain Combinations in

Poultry Feeding. 1. For Palatability and Nutritive Value of Broilers and Turkeys Finished for Market. To determine the comparative value of corn, wheat, oats and barley combinations in finishing broilers and turkeys for market.

Poul. Indus., M. S. 812, Home Econ. 26

Nebr.

Determination of the Causes of Deteriorations of the

Thick Egg White and the Yolk Membrane During Storage and Marketing of Shell Eggs. To determine the chemical changes associated with the deteriorative thinning of the thick egg white and relaxation of the yolk membrane during the storage and handling of shell eggs.

Biochem., Nutr., Poul. Husb. 463 (NCM-7)

N. J.

The Decline in Egg Quality, with Particular Reference to Pre-Refrigeration Time and Sweating after Refrigeration.
To study (1) factors affecting loss in albumen quality between time of laying and refrigeration and (2) factors affecting loss in albumen quality following removal from refrigeration.

Poul. 572

N. Y.

(Cornell) Effect of Selected Egg Characteristics and Merchandizing Practices on Egg Sales. To (1) study the effect of price differentials between selected characteristics of eggs and the effect of different merchandizing practices on egg sales; (2) evaluate consumers' knowledge of egg quality and their likes and dislikes relative to external and internal characteristics; and (3) measure the impact of egg quality educational programs relative to these factors.

Agr. Econ., Poul. Husb. 16-3

N. Y.

(Cornell) Factors Affecting Table Quality of Poultry Meat.

A. Effect of rate of Freezing on the Appearance and Storage Life of Ready-To-Cook Poultry Carcasses. B. Influence of Aging on Quality of Poultry Meat. To determine (1) the optimum rate of freezing and temperature of turkey and chicken carcasses with regard to discoloration and its cause; and (2) the optimum time for aging of carcasses of different species as reflected in tenderness, palatability and keeping quality.

Poul., Home Econ. 147

Ohio

Methods of Maintaining Quality in Poultry Products.
To determine keeping quality of ready-to-cook cut-up poultry when: (1) poultry has been fed high levels of antibiotics, (2) held at different temperatures, (3) ice packed and in chilled air, (4) dipped in chlorine, antibiotic and other solutions, (5) dipped in boiling water, hot stabilized oil and adhesive dips containing germicide, (6) packaged in vented and airtight containers and (7) subjected to repeated freezing and defrosting.

Poul. 74 (NOM-7)

Pa.

The Influence of Energy Fiber Concentrations and Protein Source of the Diet on Certain Egg Quality Characteristics.
To study the influence of energy-fiber concentrations and protein source of the diet on the following egg quality characteristics: U. S. grade, albumen conditions, incidence of blood and meat spots, shell thickness, and yolk color.

Poul. Husb. 1199-B

S. Dak. Maintaining Quality of Turkey Meat in Market Channels.
To study possible factors which may influence keeping quality
of turkeys in storage and develop methods for measuring quality.
Poul. 261-R (NOM-7)

Tenn. Influence of Rate of Cooling and Water Absorption on
Shelf Life, Cooking Quality and Flavor of Chickens. To study
(1) the relationship of cooling periods and cooling media to
change in weight, carcass quality, and shelf life of various
classes of poultry, and (2) the relationship of cooling pro-
cedure to cooking characteristics and consumer acceptability
of various classes of poultry.
Home Econ., Bact. 115

Wash. Shelf Life of Fresh Poultry Meat and its Relationship
Practices and Costs. To (1) evaluate methods of increasing
shelf-life with respect to microbial growth, off-odor,
appearance, and flavor, (2) evaluate methods with respect to
consumer acceptability; and (3) learn the effects of increasing
shelf-life on processing and merchandising.
Home Econ., Poul., Agr. Econ. ES 400

Wash. Comparative Efficiency and Acceptability of Several
Methods for Preserving Quality of Shell Eggs. To study
(1) the relative efficacy of thermostabilization, CO₂, oil
treatment, and plastic treatment of shells in preserving
interior quality of shell eggs during marketing; and (2)
which of above methods is most economical.
Poul. Sci., Home Econ. ES 404

Wash. Cooling and Freezing of Poultry Meat. To study (1)
cooling and freezing rates for poultry, (2) differences in
appearance of poultry cooled and frozen by various methods,
(3) weight changes in fresh dressed poultry meat as influenced
by methods of cooling and freezing, (4) the effect of different
methods of packaging poultry as an influence on freezing rates,
(5) the amount of moisture loss during thawing of meat as
influenced by cooling and freezing methods, and (6) tenderness
as affected by cooling, freezing, and thawing treatments.
Poul., Home Econ., Agr. Econ. 1275

W. Va.

Prevention of Rancidity in Carcass Fats of Turkeys and Hogs. To (1) study methods to delay development of rancidity in carcass fats of turkeys and hogs; (2) develop and evaluate methods to predict how long carcass fats will keep without becoming rancid under normal storage conditions; and (3) obtain information on movement of vitamin E and other antioxidants from circulatory system to depot fats of living birds and animals.

Anim. Husb., Agr. Biochem. 6

METHODS AND CRITERIA OF QUALITY EVALUATION

Iowa

Poultry and Egg Marketing: Technological Aspects; Measurements of Quality in Poultry and Egg Products Using Subjective and Objective Tests. To (1) establish criteria of quality for eggs and poultry products; (2) learn what factors affect decline in quality of poultry and eggs during processing and storage; (3) develop methods for maintaining quality in poultry and eggs in time between producer sale and consumer purchase; (4) evaluate efficiency of new methods which might reduce losses or minimize changes in quality of poultry and egg products; (5) develop reliable objective tests for use in estimation of quality in eggs and poultry; and (6) establish procedures for subjective evaluation to accurately measure differences in fresh, processed and stored eggs and poultry.

Home Econ., Poul. Husb., Bact., Tech. 1026 (NCM-7)

Iowa

Beef Skeletal Muscle Connective Tissue in Relation to Tenderness in Meat. To investigate fundamental causes of the toughness or tenderness of meats and to evaluate connective tissue of beef skeletal muscles as related to these problems.

Home Econ., Anim. Husb. 1313

Kans.

Enzymatic Separation Applied to the Determination of Collagen in Meat. To determine the effectiveness of certain proteolytic enzyme preparations in releasing collagen from combination, association, or entanglement with contiguous muscle protein structures.

Home Econ., Chem. 419

Kans.

Tenderness of Certain Beef Muscles at Several Stages During Cooking. To (1) study changes in tenderness of beef during cooking as measured by organoleptic, physical, histological, and chemical tests; (2) develop histological staining procedures specific for frozen sections of beef muscle; and (3) attempt to isolate the effect of changes in condition of non-collagenous structural muscle protein on tenderness.

Home Econ. 479

Maine

The Effect of Pesticides on Quality of Fruits and Vegetables. To (1) evaluate some sensory techniques commonly used to determine quality of fruits and vegetables; and (2) determine the effect of some pesticides on quality of selected fruits and vegetables.

Hort., Ent., Plant Path. 28 (NE-15)

Md.

Development of Objective Grades and Standards and Quality Control Methods for Vegetables. To (1) develop reliable objective indices of quality for vegetables and vegetable products; (2) utilize above methods as bases for impartial grades and standards which will be equitable to growers and buyers; and (3) utilize above methods in quality control procedures in harvesting, marketing, and processing of vegetable crops.

Hort., Agr. Engin., Q-58-f

Md.

Evaluation of Possible Off-Flavors Resulting from the Application of Chemicals on Soils and Growing Crops. To (1) develop efficient, uniform methods for evaluating off-flavors in foods; and (2) provide screening apparatus for evaluating new chemicals proposed for use on soils and growing crops.

Hort. QH-58-o (NE-15)

Mass.

Effect of Pesticides on Quality of Fruits and Vegetables. To (1) develop effective methods for detecting differences in flavor which may be caused by pesticides per se to decomposition products of pesticides, or to changes in food product itself caused by physiological response of plant to the chemical; (2) correlate pesticide or decomposition product residuals with organoleptic analyses; and (3) determine taste threshold values of pesticides and/or their decomposition products.

Food Tech. 71 (NE-15)

Minn.

The Nutritive Value and Quality as Determined by Objective Tests of Frozen Fruits and Vegetables. To study (1) the ascorbic acid and dehydro-ascorbic acid changes caused in fruits and vegetables by methods of preparation for freezing and of freezing-storage and (2) the changes in color, texture, and any other quality factors as indicated by objective tests; and (3) measurements in (1) and (2) as guides in working out better methods for the freezing and freezing-storage of fruits and vegetables.

Home Econ. 2011

Minn.

Studies on Harvesting, Handling, Storage and Marketing of Table Stock Potatoes. 1. Studies on the Relation of Harvesting and Handling Operations and Storage Conditions to the Market and Culinary Quality of Potatoes. To improve the market and culinary quality of potatoes grown in the Red River Valley.
Hort., Agr. Engin., Plant Path. 2118-1

Miss.

Methemoglobin Levels in the Blood and Nitrate Levels in the Urine of Small Laboratory Animals Fed Sublethal Amounts of Nitrate. To learn (1) if small laboratory animals undergo poisoning, as measured by methemoglobin levels, when NaNO_3 is incorporated into the diet over a sublethal range; (2) the range of feeding levels over which methemoglobin increases; and (3) as inferred from objectives (1) and (2) to describe a tool for future use in studies of toxicity of nitrates in plants.

Home Econ., Chem. HJ-4, HF-5 (S-32)

Mo.

Investigation of the Changes in Meat Pigments under Various Treatments. To (1) study photometrically the changes in meat pigments when piece meats are treated with anti-oxidants including sulphur-containing protein derivatives; (2) study effects of various acceptable additives on meat pigments and palatability of meats; and (3) develop and evaluate a simplified spectrophotometric method for defining the condition of meat pigments and for detecting use of certain "color preservatives".

Home Econ. 87

Nebr.

Enzymes of Wheat and Flour and Their Relation to Baking Characteristics. To study methods for identification and estimation of flour enzymes and their relation to flour properties.

Chem., Nutr. 184

Nebr.

Beef Carcass Evaluation. To study (1) factors contributing to carcass desirability and their relative importance; (2) the relation between economically important carcass traits and measureable differences in live animal characteristics; and (3) factors that contribute to consumer selection of different retail cuts.

Anim. Husb., Agr. Econ. 541

N. J.

The Effect of Pesticides on Quality of Fruits and Vegetables. To develop a more efficient, objective, and uniform method of determining quality and more particularly the flavor of pesticide treated fruits and vegetables.

Food Tech. 290 (NE-15)

N. C.

Determination of Objective Measurements of Flavor or Aged Country Hams. To evaluate units of measurements developed in prediction equations used in expressing aged ham flavor.

Anim. Indus., Agr. Econ., Home Econ. HM-9

Ohio

Development of Methods for Evaluating Quality of Fresh and Processed Fruits and Vegetables. To (1) develop new methods for quality evaluation of fresh and processed fruits and vegetables, using both subjective and objective techniques; and (2) compare quality evaluations secured by newly developed procedures with those from commonly employed techniques.

Hort. 29

Okla.

Methods for Quality Evaluation of Small Wheat Samples.

To (1) establish a satisfactory method for the production of flour from small samples of wheat; (2) establish methods suitable for baking quality evaluation of flours from small samples; and (3) investigate relationships between milling and baking quality and chemical and physical properties of wheat.

Agr. Chem., Agron. 875

Oreg.

Investigations and Standardization of Subjective Methods for Evaluation of Food Quality. To evaluate subjective methods now being used for testing quality of food products, and to develop improved procedures for standardizing subjective methods of food testing.

Home Econ. 138

Oreg.

Comparison of Small Preference Panels with a Household Consumer Panel. To compare (1) "expert" panels of 10 to 20 members, (2) student panels of 100 to 150 members and (3) household consumer panel of 200 city families in western Oregon for their preferences on 12 Oregon food products and to evaluate the effectiveness of (1) and (2) in estimating preferences of consumer panel.

Statis. 253

Pa.

Shell Porosity and Quality Deterioration of Market Eggs. To (1) evaluate existing porosity determination methods in relation to quality deterioration of market eggs and seek method of greater accuracy and speed; (2) study the relationship between shell porosity and quality loss of market eggs; and (3) study the effect of shell treatments and storage practices on shell porosity and quality deterioration of market eggs.

Poul. Husb. 1199-D

Pa.

The Palatability Panel as a Tool for Determining Quality and Consumer Preference of Food. To (1) develop techniques and procedures for selecting, training, and conducting analytical taste panels; (2) find methods of increasing objectivity in an analytical taste panel; and (3) study the relationship between analytical taste panels and consumer acceptance testing.

Home Econ. 1257 (NE-15)

Utah

Chemical Techniques for Detecting Flavor Changes During Meat Processing. To develop chemical techniques for rapid and reliable evaluation of flavor of processed meat and to correlate chemical techniques for evaluating flavor with organoleptic tests.

Bot., Plant Path., Food and Nutr. 458

Wash.

The Evaluation of Raw Materials for Food Processing.

To quantitatively evaluate materials used in producing processed food in terms of factors which influence quality values of processed products.

Hort., Home Econ. 1152

Wyo.

Consumer Acceptance and Evaluation of Beef from the Feed-Lot and Range. To (1) study techniques for obtaining consumer acceptance information; (2) determine consumer acceptance of different grades of beef from the standpoint of price, grade, amount of fat, and other physical characteristics and (3) compare laboratory evaluation of certain cuts of beef of different grades with expressed consumer preference of these cuts; and (4) compare compatibility of standards used in grading.

Agr. Econ., Anim. Prod., Home Econ., Chem. ES 266

HOUSEHOLD AND INSTITUTIONAL UTILIZATION OF FOODS

Food Preservation Principles and Procedures

Ariz.

Factors Related to Oxidation Reactions in Milk, Milk Products, and Milk Constituents. To study factors related to basic reactions involved in the oxidation of milk, milk products, and milk constituents.

Dairy Sci. 320

Ark.

Factors Affecting the Preservation of Cured Pork.

To compare various methods of preservation of pork by the cures now available and determine the effects of such factors as lapse of time from slaughter until carcass is chilled, various methods of making carcass cuts, and relative humidity upon preservation of pork cuts.

Anim. Indus., Vet. Sci. 336

Calif.

The Milk Lipase System, The Specificity and the Mode of Action in Hydrolysis of Milk Fat. To obtain information on (1) the mechanism of activation of lipolysis by activating treatments; (2) the number of lipases in milk and their specificity; and (3) the existing wide variation in susceptibility of milk to induce lipolysis.

Dairy Indus. 1030C

Calif.

Non-Enzymatic Browning in Foodstuffs. To study the deterioration of foodstuffs by non-enzymatic browning with an emphasis on reactants and the mechanism whereby numerous reaction products are formed.

Food Tech. 1111

Calif.

Pectin Enzymes of Fungi. To determine the role of yeasts and other fungi in the hydrolytic breakdown of pectic substances, and to investigate the mechanism of enzyme activity on pectic substances.

Food Tech. 1522

Calif.

Pigmentation in the Tomato and the Color of Processed Tomato Packs (including Solid Pack, Stewed Tomato, Juice, Paste and Catsups). To (1) control nature and quantity of natural pigments of tomato; and (2) evaluate results in terms of color of the processed product, and (3) determine factors controlling the grade of final product.

Food Tech., Gen. Agron., Veg. 1545

Calif.

The Catalysis and Inhibition of Fat Oxidation at Low Temperature. To (1) measure the rate of catalysis of unsaturated fat oxidation at low temperatures by compounds such as hemin, menoglobin, and cytochromes and by enzymes; (2) determine the relative effect of various antioxidant inhibitors; and (3) formulate mechanisms of catalysis and inhibition.

Food Tech. 1506

Del.

Chemical Aspects of the Marketing of Poultry Meat.
To (1) develop improved techniques for maintaining quality of chickens from the farm to consumer; and (2) establish a physioco-chemical basis for changes in quality which occur as a result of the storage of ready-to-cook poultry.

Agr. Chem. 28C

Ga.

Improving Present Practices of Freezing Fruits, Vegetables and Meats. To study (1) varieties of fruits, vegetables and meats suited for freezing in locker plants and home units, (2) the use of anti-browning agents and anti-oxidants to extend storage life of frozen products, (3) the type and methods of packaging to prevent desiccation, oxidation and flavor loss, and (4) means to sweeten frozen fruits for optimum flavor, color, and texture.

Food Proc. 72

Hawaii

Preservation of Foods in Hawaii by Quick-Freezing.

To (1) determine the adaptability of tropical and sub-tropical fruits to preservation by quick-freezing; (2) determine techniques and procedures resulting in quality frozen products; (3) determine storage life, and nutritive value, especially ascorbic acid, of frozen preparation; (4) develop suitable procedures for freezing fruits, vegetables, poultry products, meat and fish in the home in Hawaii; and (5) conduct taste panels and cuttings for food quality, acceptability and consumer reaction.

Food and Nutr. 516

Idaho

Breeding Hybrid Onion Varieties for Storage and Dehydration in Idaho. To develop (1) hybrid onion varieties having high yielding ability, appearance and storage quality, and resistance to certain disease; (2) yellow or white hybrid onions having high yielding ability coupled with high solids content for use in dehydration.

Hort., Plant Path. 253

Idaho

Effect of Some Dietary Supplements on Cost and Yield of Edible Portion of Pork, and on the Frozen Storage Life of Pork. To study, from the consumer standpoint, the effect of feeding alpha-tocopherol and an antibiotic alone and in combination on (1) the cost of production and yield of edible portion of pork, including ratio of fat to lean; and (2) the development of rancidity in frozen pork.

Home Econ. 271

Ill. The Causes and Cure of the Destabilization of Milk Proteins by Heat. To prevent the loss of dairy products due to defects attributed to heat stabilization of milk proteins by finding their fundamental causes; and more immediately, to (1) characterize electrophoretic pattern of milk proteins in normal environment; and (2) correlate patterns of various milk with their heat stability.

Food Tech. 50-343

Ill. A Study of Various Factors Affecting the Thermal Resistance of Bacterial Endospores. To evaluate and determine conditions which affect the thermal resistance of bacterial endospores with particular emphasis on endospores produced by bacteria of importance in spoilage of thermally produced foods.

Food Tech. 50-376

Ill. A Study of the Bactericidal Effects of Ultrasonic Waves in Dairy Food Products. To determine the applicability of ultrasonic waves to the sterilization of dairy and food products.

Food Tech. 50-383

Ill. Home Freezing of Foods. To study (1) methods of freezing and means of improving those now in use, (2) investigate the suitability for freezing of varieties of fruits and vegetables, (3) determine which cooked and prepared foods can be frozen and (4) define conditions which must be fulfilled if optimum results are to be obtained.

Home Econ. 60-328

Ind. Methods of Processing and Packaging of Frozen Poultry in Relation to Institutional Cookery. To develop packages or package liners, methods of cutting and packaging, and freezing which would permit institutional kitchens to place frozen poultry directly in the oven to complete the cooking of partially cooked products, or to completely cook a frozen product.

Poul., Biochem., Home Econ. 776

Kans. Effects of Varieties and Certain Treatments on Quality of Fruits and Vegetables Preserved by Freezing. To study (1) new varieties of fruits and vegetables for freezing, and to compare their desirability with well established varieties; (2) the effects of pre-freezing treatments with solutions of calcium salts and/or other materials found to be suitable for use with fruits and vegetables; (3) the effect of freezing techniques on the texture of products.

Hort., Home Econ. 233

Ky. Some Factors Affecting Firmness of Tissue Structure, Color and Palatability of Frozen Berries and Vegetables and Their Effect on the Ascorbic Acid Content of the Products. To determine the effect of the following factors on the firmness of tissue structure, color and palatability of frozen foods; (1) the addition of calcium compounds for berries and vegetables as they are prepared for freezing; and (2) icing berries and vegetables immediately upon harvesting. Also to study the ascorbic acid content of the frozen foods prepared for freezing by the different procedures noted above.

Home Econ. 504

Ky. The Effect of Smoking and of Smoking at Different Temperatures on the Shrinkage, Rancidity, and Palatability of Dry-Cured Hams. To compare the effect of smoking, and of smoking at different temperatures, on shrinkage, rancidity, and palatability of dry-cured hams aged under constant controlled temperature and humidity.

Anim. Indus., Agr. Econ. 1008

Maine Harvesting and Storage Experiment with Maine Apples. To study (1) the adaptability of Maine apples to controlled atmosphere storage; (2) the best time of harvest for good storage; (3) the effects of various fertilizer and mulching treatments on storage life, quality, and color of fruit; (4) the effect of use of carbon filter systems on storage life, and (5) the keeping quality of red sports of varieties as compared to standard varieties.

Hort. 83

Mass. Attempts to Improve the Efficiency of Farm and Commercial Vinegar Making Methods. Determination of Optimum Conditions for the Conversion of Alcohol to Acetic Acid by Acetobacter. To study the nutritive and environmental requirements of the Acetobacter for the efficient production of vinegar from ethyl alcohol and fermented cider.

Bact. 15

Mass. Thermal Destruction of Bacterial Spores and Heat Labile Vitamins in the Temperature Range of 250 to 300°F. To study destruction rates, and factors which influence destruction of bacterial spores, and heat labile vitamins at temperatures of 200 to 300°F.

Agr. Engin. 48

Mass.

Increasing Marketability of Processed Fruit and Vegetable Products Through Improvement in Quality. To study (1) the effect of aseptic canning and high temperature-short time processing on quality retention in baby foods; (2) thermal destruction of enzymes causing deterioration in fruit and vegetable products; (3) the effectiveness of sorbic acid as a selective microbial inhibitor in fruit products and pickle; (4) the causes and control of softening in salt stock pickles; and (5) the influence of handling methods on quality of pasteurized fresh pack pickles.

Food Tech. 66

Mass.

Home Preservation of Foods by Methods Other Than Canning. To study such methods of home food preservation as dehydration or drying, freezing, salting, and pickling.

Food Tech. 67

Mich.

Studying the Economic and Technical Problems of Marketing Prepackaged Fresh and Frozen Meat. To conduct economic and technical studies on processing, packaging and distribution of fresh and frozen meat to (1) determine the best methods for speeding desirable color development and maintaining it in consumer packages suitable for freezing, storing, transporting and displaying in retail stores, (2) test suitable wrapping materials and develop processing methods to produce frost-free packaged meats, (3) determine factors affecting consumer acceptance of frozen meats, and (4) identify and solve economic and technical problems of centralized prepackaging.

Agr. Econ. ES 155

Minn.

Preparation and Preservation Factors in Relation to the Nutritive Value and Palatability of Meat. The Effect of Freezing and Freezing Storage upon the Quality of Meat. To determine the factors which the homemaker must take into consideration in order to have meat of good quality when preserving it by freezing storage.

Home Econ., Anim. Husb. 2003-2

Minn.

Handling Processing, Packaging, and Storing of Fruits Vegetables, and Other Food Products. 1. Processing, Packaging, Freezing, and Storing of Fruits, Vegetables, and Other Foods for Preservation by Freezing. 2. Varietal Adaptability of Fruits and Vegetables for Processing. 3. Handling, Packaging, Transporting and Storing of Fresh Fruits and Vegetables. To (1) obtain information of value to commercial processors, owners of frozen food locker plants, and to home processors; of fruits and vegetables for naming and introduction; and (2) study post-harvest handling, packaging, and storage of fresh fruits and vegetables, including seedling selections; (3) Assist Horticulture Department in selecting new varieties of fruits and vegetables for naming and introduction.

Hort. 2103

Mo. Relationship of Certain Physical, Chemical, and Microbiological Properties of Eggs to the Preservation and Utilization of Shell Eggs and Egg Products. To study fundamental causes for deterioration of chick white gel structure and the relation of these factors to performance of egg white; (2) the effect of CO₂ on pH of white and its effect on preservation of thick white gel structure at various storage temperatures; (3) the importance of various handling methods and treatments toward retaining "quality" in shell eggs and egg products; (4) the influence of season and age of bird on shell egg quality, egg composition and functional properties of white; (5) the effect of chemical additives on functional properties of egg white products; (6) the effectiveness of fermentation techniques ("resting cell") and possible use of chemical blocking agents to retard browning reaction in whites; and (7) methods for modification and use of yolk and chalazal fraction of white.

Poul. 17 (NCM-7)

Mo. Control of Microbial Development During Meat Processing. To control microbial development during meat processing by the use of ultra violet radiation.

Anim. Husb. 257

Mo. Technology of Apple Products. To (1) develop a technique for making a frozen concentrated apple cider which would appeal to the consuming public, characterizing the quality factors of astringency, body, relative sweetness, color, flavor, and aroma for each variety; and (2) develop a continuous mechanical device for apple juice extraction, to improve yield, quality, and sanitation.

Hort 233

Mo. Technology of Irish Potato Products. To (1) determine relative storing qualities of Irish potato varieties and the effect of several treatments on these varieties; and (2) study factors affecting texture and color of mashed potatoes during preparation, freezing and frozen storage.

Hort. 234

Mont. The Home Freezing of Foods. To investigate (1) the freezing quality of varieties of vegetables and berries suited to climatic conditions of Montana, and (2) the freezing of cooked and prepared foods using standard recipes with adaptations for altitude.

Home Econ., Hort. MS 832 29

Mont.

The Use of Water Softeners in the Blanching Process for Vegetables Preserved by Freezing. To study (1) the effect on flavor, texture, and appearance of frozen vegetables when waters varying in degree of hardness are used for blanching and rinsing; (2) the improvement in flavor, texture, and appearance of vegetables when waters softened by several methods are used; and (3) the effect of varying concentration of water softening agents in blanch water only on flavor, texture, and appearance of vegetables.

Home Econ. MS 985

N. C.

Shelf Life of Fresh and Previously Frozen Broiler-Fryers as Affected by Time Held in Slush Ice after Evisceration. To study (1) moisture uptake of eviscerated broiler-fryers held in slush ice for 1, 3, 5, or 24 hours, (2) the possible relationship between amount of moisture uptake in slush ice cooling and bacterial contamination of eviscerated broiler-fryer carcasses, and (3) the possible relationship between holding time in slush ice and shelf life of fresh and previously frozen broiler-fryers.

Poul., Bot., Agr. Econ. 19

N. C.

The Commercial Brining of Fruits and Vegetables. To study (1) the improvement of existing salting methods for certain vegetables to reduce losses; (2) the extension of salting procedures to many vegetables not now commercially brined; and (3) brining of surplus parts of fruit crops as temporary preservation method.

Hort. H-78

Nebr.

Packaging Materials for Frozen Meat Storage. To study (1) the relationship between water-vapor permeability at 0°F of packaging materials for frozen meat and the rate of shrinkage due to moisture loss in stored product, (2) the cause of differences in widely divergent weight losses thru same packaging material for different types of meat packaging materials.

Engin., Anim. Husb. 494

N. Y.

(Cornell) The Physico-Chemical Properties of Milk Fat. To identify the factors governing the lipolytic and oxidative processes in milk and its products, their relationships and inter-effects.

Anim. Husb., Dairy Indus. 85

N. Y.

The Yield and Quality of Frozen Apple Slices Prepared by Different Methods of Processing. To determine yield and quality of frozen material that may be obtained when apple slices are blanched by different methods after varying periods in cold storage.

Sci. and Tech. 3b

N. Y.

Factors Involved in Darkening of Sauerkraut. To determine causes of darkening of color and development of certain off-flavors in sauerkraut and to define these qualities on an objective basis.

Food and Sci., Tech. 3d

Ohio

Studies in the Processing of Fresh Meat. Biochemical and Bacteriological Studies Fundamental to the Processing of Fresh Meat. To find methods of processing fresh meat which will upgrade the less desirable carcasses; permit greater quality control along the lines of palatableness; diminish the great variation in consumer acceptability resulting from breeding, nutrition, and handling; augment effectiveness of refrigeration in preserving meat; and prevent certain spoilage such as "bone sour".

Biochem., Anim. Sci. 70

Ohio

Effects of Varieties, Cultural Practices, Storage, Pest Control, and Processing Techniques on the Chipping Quality of Potatoes. 1. Influence of Variety, Fertilizers, and Date of Planting on Quality of Potatoes Manufactured into Potato Chips. To determine (1) changes in cultural practices needed to take full advantage of longer growing period and larger yields resulting from the use of new varieties, improved pesticides and fertilizers with higher proportion of nitrogen; and (2) the effect of cultural practices on quality of the crop, particularly as used for potato chips.

Hort. 122-1

Oreg.

Precooking and Freezing of Foods Containing Oregon Fruits. To (1) determine the adaptability of Oregon fruits to freezing in raw and precooked foods, with special reference to flavor, texture, and appearance changes in products during storage; and (2) develop control procedures to reduce or overcome problems of shrinkage of fruit, excessive juiciness of the product, and flavor and texture losses as commonly shown by precooked frozen products now available.

Food Tech. 147

Oreg.

Formulation of New Commercial Food Products. To develop formulas and procedures for using agricultural products in prepared or convenience foods, suitable for sale through various marketing channels, and to determine for these foods the acceptability, stability, and costs of production.

Food and Dairy Tech. 352

Oreg.

The Physical Structure of Batters and Doughs as Affected by Freezing Storage. To (1) develop methods for studying structural relation of batter and dough constituents; (2) study the physical structure as related to quality of baked products; (3) evaluate changes in normal structure in freezing processes or during frozen storage; and the effect of these changes on product quality; and (4) explore methods of stabilizing normal structure with the object of extending storage life and improving quality of products baked from frozen batters and doughs.

Home Econ. Res. 389

Pa.

Factors Involved in the Preparation for Freezing, Freezing, Storing, and Preparation for Serving, of Foods. To determine the influence on quality of certain technological factors encountered in the preparation, freezing and cooking of frozen foods, with particular reference to methods of preparation, and handling previous to freezing, method and rate of freezing, time and temperature of storage, and methods of cooking and serving.

Agr. Engin., Chem., Bact. Home Econ. Anim. Husb., Hort. 1065

Pa.

The Investigation of Non-Blanching Versus Blanching on the Final Quality of Vegetables Frozen for Market Under Conditions of a "Quick Freeze." To study the relationships between "quick freezing", blanching requirements and storage life.

Food and Nutr. Anim. and Biochem. 1335-B

P.R.

The Preparation of Juices, Nectars, and Concentrates from Tropical Fruits. To (1) determine optimum conditions for the extraction, preservation, canning of tropical fruit juices, nectars, and concentrates; (2) study the keeping quality of canned juices, nectars, and concentrates; (3) determine by organoleptic tests the acceptability by consumers of prepared products; and (4) study means for the production of uniform quality packs for new products.

Chem. 29

P. R.

Canning of Sweet Potatoes. To develop a process suitable for canning the different varieties of sweet potatoes grown in Puerto Rico.

Chem., Gen. 65

P. R.

Preparation of Guava Jelly and Guava Paste. To study the conditions best suited to prepare guava jellies and pastes of good quality and uniformity, and more specifically to: (1) determine characteristics which guava pulp must have so that it may be suitable for paste manufacture; (2) determine the characteristics which the extracted guava juice must have so that it may be suitable for jelly manufacture; (3) develop control procedures for cooking the paste and extracted juice to uniform consistency and color; (4) study the nature of the darkening of both paste and jelly during storage and develop procedures for preventing or retarding this discoloration; (5) study keeping quality of jellies and pastes during storage at 85°F., and at other convenient temperatures; (6) study procedures for the depectinization of guava juices and the addition of commercial pectin in order to improve the uniformity of the jellies produced therefrom; (7) correlate organoleptic properties of the jellies and pastes with their chemical analyses and (8) search for better containers especially for pastes, which are more practical and convenient than the ones which are now in use.

Chem. 66

P. R.

The Utilization of Tropical Fruits in the Preparation of Juices and Pulps for Remanufacturing Purposes. To develop industrial procedures for preparation of juices and nectars from tropical fruits for remanufacturing into jellies, jams, pastes, butter, baby foods, soft drinks, and ales.

Chem. 67

P. R.

The Canning of the Pigeon Pea. To determine (1) maturity indexes for harvesting at proper maturity; (2) adequate procedures for size and maturing classification; (3) conditions necessary for adequate blanching; (4) adequate canning procedures to control the number of splits and prevent discoloration; (5) adequate types of containers for the product; (6) adequate processing schedules; (7) behavior during storage; (8) factory control procedures and quality standards; and (9) canning quality of different pigeon pea varieties of Puerto Rico.

Chem. 89

P. R.

Conservation of Tropical Fruits and Vegetables by Freezing. To study (1) the practical possibility of conserving different tropical fruit and vegetable varieties by freezing; (2) changes occurring after harvesting and their effect on product quality; (3) changes occurring during preparation, freezing, cold storage, and thawing; (4) vitamin retention of tropical fruits and vegetables on freezing, cold storage and thawing; (5) adequate types of freezing containers or wrappers; (6) quick and slow freezing to learn relative advantages and effects on quality of product; (7) best form for freezing fruits and vegetables; (8) shelf life of frozen fruits and vegetables; and (9) the acceptability of frozen fruits and vegetables by prospective consumers.

Food Tech., Lab. 109

P. R.

Dehydration of Plantains and Bananas for the Preparation of Flours, Flakes and Powders. Develop: (1) an economical processing method for preparing flour from green plantains and bananas; (2) an economical processing method for preparing flakes and powders from ripe plantains and bananas; (3) adequate packaging and storing procedures for these products; (4) shelf-life recommendation for products; and (5) find new uses for products through consumers acceptance tests.

Food Tech., Lab. 125

Tenn.

Preservation of Fruits and Vegetables by Freezing. To determine (1) quality under preservation by freezing, of fruits and vegetables; (2) varieties and stages of maturity best suited for freezing; (3) best preparatory treatments of fruits and vegetables, and (4) relative protective qualities of the various wrapping and packaging materials commonly used for frozen foods.

Chem. 83

Tenn.

Home Preservation of Fruits and Vegetables by Dehydration. To determine (1) varietal suitability of a limited number of Tennessee-grown vegetables, and best stages of maturity for dehydration; (2) relative protective qualities of various containers for dehydrated foods and best home-storage conditions; (3) quality of the dehydrated products; and (4) improvement of the home dehydrators.

Chem. 84

Tenn.

Factors Affecting Technology, Quality and Consumer Opinions of Colloid-Treated Strawberries Preserved by Freezing. To study (1) the quality of frozen berries as affected by the addition of newer pectins, (2) methods and technology for the incorporation of more effective firming agents, (3) other substances that may be used singly, or in combination with pectin and sugars, to increase drained weight of thawed berries, (4) the chemical composition and stage of maturation as they affect drained weight of pectin-treated berries and (5) consumer opinions of colloid-treated strawberries preserved by freezing.

Chem., Food Tech. 85

Tex.

Biochemical Characteristics of Heat and Chemically Injured Psychrophilic Bacteria. To study (1) the effect of cellular injury as caused by sublethal treatments with heat, alcohol, chlorine, and quaternary ammonium compounds on nutritional requirements of predominant types of psychrophilic bacteria; (2) the effect of cellular injury by same agents on carbohydrate and nitrogen metabolism of psychrophiles, and biochemical properties of these cells as formation of proteolytic and lipolytic enzymes; (3) the mode of action of injurious agents in inactivation process and (4) the nature of restoration of viability by key intermediates as sodium pyruvates and citrates.

Dairy Husb. 1055

Va.

Manufacture, Storage Life, and Utilization of Concentrated, Dried, and Frozen Milk Products. To (1) study chemical changes, bacterial destruction, and enzyme inactivation as attributable to preheating, condensing, spray-drying, and instantizing during manufacture of dried milk products; evaluate effects of changes on quality, use, and storage life of products; (2) develop new products and improve existing manufacturing procedures, packaging methods, storage conditions, and food uses of dried and frozen products; and (3) evaluate temperature "no-hold" heat treatment of fluid milk and cream for manufacture of concentrated dried, and frozen dairy products.

Dairy Sci. 86047

Va.

Processing and Merchandising Meats from Animals Produced under Virginia Farm Conditions. To (1) investigate procedures for processing and merchandising meats from cattle and sheep produced under Virginia farm conditions; (2) devise means of estimating carcass value in live animals; (3) develop procedures for more precise evaluation of carcasses from meat animals in breeding, feeding and management research; and (4) investigate methods of curing and storing home meat supplies.

Anim. Indus., Home Econ., Agr. Econ. 86074

Wash.

The Preservation of Fruits and Vegetables by Freezing. To (1) continue research for the improvement and development of frozen products and of processes used in freezing preservation of fruits and vegetables; and (2) study fundamental physical and chemical principles involved in freezing preservation.

Home Econ., Hort. 616

Food Preparation Principles and Procedures

Colo. The Baking of Flour Mixtures at High Altitudes. To study (1) how constituents of flour mixtures behave under influence of pressure, humidity, and temperature variables; (2) fundamental principles involved in behavior; (3) the effect of changes in kinds and amounts of constituents upon texture and acceptability of products; (4) suitable methods of mixing; (5) formulas for ready mixes; and (6) tests of resulting products by histological chemical and physical means.
Home Econ. 60

Ga. Roasting Peanuts. To study the chemistry of the process of roasting peanuts and to learn effect of variations in the process on the resulting product.
Chem. 62

Ga. Peanut Curing. To study the effect of (1) various curing methods upon quality and yield of peanuts for seed stock, edible trade, and oil and (2) high temperatures on edible qualities and viability of peanuts, (3) variations in methods of curing to reduce labor costs and improve the quality of peanuts.
Agr. Engin., Plant Path. 65

Ill. Correlation of the Chemical and Physical Properties of Starches with Their Behavior in Food Products. To study (1) by what means fat, protein, softening agents, salts and acids affect the behavior of food starches, modified starches, and flours under food preparation conditions; (2) the applicability of the basic data to the selection of starches for specific food products.
Home Econ. 60-322

Ill. Soybeans and Soybean Products as Human Food. To investigate the desirability of soybeans and their products for human consumption, study suitability of different varieties for cooking and processing and determine chemical constituents of soybeans so as to ascertain why they differ in culinary qualities from other legumes and if treatment of beans might be modified to make them more acceptable.
Home Econ. 60-324

Ind. Methods of Processing and Packaging of Frozen Poultry in Relation to Institutional Cookery. To study the development of packages or package liners, methods of cutting and packaging, and freezing which would permit institutional kitchens to place frozen poultry directly in the oven to complete the cooking of partially cooked products, or to completely cook a frozen product.
Food Nutr., Poul., Biochem., Home Econ. 776

Iowa

Relative Merits of De-boned and Whole Turkey for Large Quantity Preparation and Service. To (1) investigate relative merits of various methods of dressing, preparing, cooking, and serving turkey for large quantity food service in regard to yield, cost, quality, and acceptability; (2) relate certain factors to advantageous utilization of turkey in quantity food service; (3) formulate recommendations for standard procedures regarding selection, dressing, preparation, cooking and serving of turkey in quantity, and (4) increase the use of turkey in quality food service.

Home Econ., Poul. Husb. 1338 (NC-31)

Kans.

Effect of Internal Temperature on Weight Losses, Cost per Serving, and Palatability of Chilled Top Round Roasts. To determine (1) the effect of internal temperature on weight losses, cost per serving, and palatability of chilled top round roasts graded U. S. Choice and U. S. Good when cooked at 300°F. to internal temperatures of 176°, 185°, 194°F; (2) the average cooking time per pound for roasts cooked to the designated internal temperatures; (3) the effect of adding 30 to 40 pounds of chilled meat to an oven preheated to 300°F.

Home Econ. 436 (NC-31)

Kans.

Internal Temperature as an Index to Degree of Doneness of Fresh and Frozen Roasted Turkey Halves. To (1) investigate certain internal temperatures of breast and thigh muscles as an index to doneness of fresh and frozen roasted turkey halves; and (2) establish acceptable end-points for doneness of fresh and frozen turkey halves that may be incorporated into a standardized research method for roasting turkey.

Home Econ. 498

Mass.

Pre-Peeled Potatoes for Hotels and Restaurants. To (1) study technological problems in reducing air in packages of treated, prepeeled potatoes; (2) determine which chemical agents other than those containing SO₂ could be used; and (3) study treatments, types of packaging, and storage life of pre-peeled product before and after opening package.

Food Tech. 70

Mich.

Effect of Large Quantity Preparation and Service on Cost and Palatability of Six Styles of Cured Ham. To study (1) the effect of specific cooking procedures on cooking losses of cured hams of different styles; (2) the relative palatability of hams of different styles; (3) formulate recommendations for standard procedures of cooking to obtain optimum quality and yield from hams packaged in different styles.

Home Econ. 838 (NC-31)

Minn.

Preparation and Preservation Factors in Relation to the Nutritive Value and Palatability of Meat. The Effect of Freezing and Freezing Storage upon the Quality of Meat.

To study the factors which the homemaker must take into consideration in order to have meat of good quality when preserving it by freezing storage.

Home Econ., Anim. Husb. 2003-2

Mo.

Studies on the Utilization of Processed Food and Food Improvement. To (1) develop and standardize family size recipes using nonfat dry milk solids for high nutritive value; (2) study better methods of applying meat tenderizers to piece meats; (3) study the development, standardization, and shelf life of a quick mix using nonfat dry milk solids and dried egg solids; (4) study the incorporation of dried eggs in food products; (5) study freezer storage of baked goods using state products as apples, soft wheat, lard, etc., (6) test methods of use of new products, which would contribute to the value of the diet.

Home Econ. 130

Mo.

Studies to Improve Food Utilization and Selection, Preparation and Storage Facilities. To provide bases for recommendations for preparation of foods of high nutritive value which will help to educate homemakers and to counteract the effect of misleading advertising.

Home Econ. 163

Nebr.

Performance of Thermostatically Controlled Gas and Electric Range Surface Units. To study the effect of (1) various utensils on operation of sensing element to maintain correct cooking conditions of heat and temperature for cooking operations involving warming, boiling water cookery, waterless cookery, frying, and pan broiling; (2) thermostat fluctuations upon the maintenance of correct heats for cooking operations needing steady temperature; and (3) variations in line voltage for electric units, and gas pressure and viscosity for gas burners on the maintenance of correct cooking heats.

Home Econ. 596

N. Y.

(Cornell)

The Properties of the Constituents of Wheat Flour and Their Role in Food Preparation. To study physical and chemical properties of the major constituents of wheat flour, their interrelationships, and the effect of addition of other ingredients in order to understand better the role of constituents in food products.

Food and Nutr. 109

N. Y. The Effect on Bacterial Counts of Holding, Refrigerating
(Cornell) and Freezing Cooked Foods Prepared in Quantity. To study
cooling rates and carry out bacterial analysis of and counts
on cooked foods prepared in quantity held at room temperature
and then stored under refrigeration or in the freezer, with
a view to offering recommendations for the holding and storage
of large quantities of foods prepared for institution food
service.

Inst. Mgt., Dairy Indus. 115

N. Y. A Comparison of the Effect of Electronic and Conven-
(Cornell) tional Cooking on the Quality of the Product and Cooking Time.
To compare the effects of cooking in a home electronic oven,
in an institution electronic oven, and in a conventional electric
oven on subjective palatability qualities, cooking losses,
cooking times, objective tenderness, objective color, and
retention of thiamine, moisture, and fat.

Food and Nutr. 199

N. Y.
(Cornell) Factors Affecting Quality of Cherry Pie Fillings. To
study (1) the interrelationships of variations in quality and
type of pack of canned and frozen cherries, and the method of
preparation of pie fillings, including variation in type of
thickener, in manner of combining ingredients, and in rate of
heating; and (2) the role and influence of different variables
on flavor, consistency and color of pie fillings.

Food and Nutr. 211

Ohio The Effects of Certain Factors in the Roasting of Beef
in Quantity. To determine the effect of size and temperature
on preparation losses, yield, and cooking time of beef roasts.
Home Econ. 168 (NC-31)

S. C. Food Value and Utilization of Sesame Meal. To (1) deter-
mine the vitamin content and general composition of sesame
meals produced in various ways; (2) develop new recipes in
which sesame meal is incorporated; and (3) determine the
desirability of incorporating sesame meal into bread and
other foodstuffs.

Nutr., Home Econ., Chem. 67

S. C. Investigation of Methods for Increasing the Utilization
of Poultry. To increase potential for use of poultry through
the development of ready-to-eat or prepared items.

Food Tech., Nutr., and Poul. 421

S. Dak. A Study of the Nutritive Value and Use of South Dakota Grown Fruits and Vegetables. To (1) study nutritive value, especially vitamin content, of different varieties of fruits and vegetables grown in South Dakota; and (2) develop new ways of using less-well-known fruits and vegetables which grow wild or can be cultivated in home or commercial gardens.

Home Econ. 210

Va. The Fortification of Foods with Non-Fat Dried Milk Solids. To study (1) solubility, density, and effect of concentration on viscosity of nonfat dried milk solids of known preheat treatments that have been manufactured by spray-dried process; (2) "instant" nonfat dried milk solids and older types of retail market nonfat dried milk solids and comparison of these results with results obtained for nonfat dried milk solids of known preheat treatment; (3) factors stabilizing foams made with non-fat dried milk solids as measured by baked custards, using gel strength, syneresis, standing index, flavor, appearance, and texture; (4) results obtained from a study of differences in cooking properties of nonfat dried milk solids as measured in baked custards with cheese making qualities of these milk solids; and (5) the tolerance of fluid milk, custards, white sauce, and baked goods for fortification with retail market instant dried milk solids.

Home Econ. 86089

Wis. Quality, Yield, and Cost of Potatoes Prepared in Quantity for Institution Food Service. To (1) learn effect of pre-preparation, preparation, and post-preparation techniques on quality, yield, and cost of potatoes prepared in quantity, (2) ascertain methods of quantity food preparation and service of potatoes which will improve appearance and palatability and minimize waste.

Home Econ. 987 (NC-31)

REGIONAL PROJECTS

NC-31

Effect of Large Quantity Preparation and Service on Quality and Yield of Meat, Poultry, Vegetables, Milk and Milk Products. To (1) investigate procedures which affect quality and yield of meat, poultry, vegetables, milk and milk products in quantity preparation and service; (2) ascertain methods of quantity food preparation and service which will improve palatability and minimize waste, and (3) formulate recommendations for standard procedures in the quantity preparation and service of quality foods.

Cooperating stations and agencies: Iowa III-B, Kans. III-B, Mich. III-B, Ohio III-B, Wis. III-B.

NCM-7

Maintaining Quality of Poultry Products in Market Channels. To (1) study the basic causes of deterioration in quality of eggs and poultry meat during the marketing process; (2) develop methods that are commercially feasible for maintaining or improving the initial quality of poultry products while in the channels of trade, and (3) develop laboratory and commercial methods for accurately measuring and/or predicting quality and quality losses in eggs and poultry meat in market channels.

Cooperating stations and agencies: Kans. I-F, Nebr. I-F, Ohio I-F, Mo. III-A, Iowa II, Ind. I-F, Mich. I-F, Minn. I-F, S. Dak. I-F, and ARS.

NE-15

Measurement and Control of Flavor Changes Caused by the Application of Pesticides to Growing Crops. To (1) evaluate new pesticides for possible flavor changes of economic importance and (2) refine sensory methods for the detection of off-flavors.

Cooperating stations and agencies: Conn. I-D, Maine II, Mass. I-D, Mass II, Md. II, N. J. II, Pa. I-D, Pa. II, R. I. I-D, and ARS.

S-32

Quality and Nutritive Value of Vegetables as Influenced by Cultural Conditions and Post-Harvest Practices. To (1) determine changes in quality and composition of vegetables during growth, after harvest, and in storage; (2) determine the influences of certain cultural conditions, including high fertilization rates, moisture, and other stresses, on these changes, and (3) develop improved physical, chemical, and biological methods for the assessment of quality and composition of vegetables.

Cooperating stations and agencies: Ga. I-D, Ky. I-D, Miss. II, P. R. I-D, and ARS.

LIST OF COMPILATIONS OF FEDERAL-GRANT RESEARCH PROJECTS
AT STATE AGRICULTURAL EXPERIMENT STATIONS

ARS-23-8:	:	
Part :	:	Subject-Matter Area
Numbers :	:	Title of Section
1	Agricultural Chemistry	Agricultural Chemistry
2	Agricultural Economics	<ul style="list-style-type: none">a. Prices, Incomes, & General Studies of Commodities & Industriesb. Farm Managementc. Land Economicsd. Farm Finance & Taxation
3	Agricultural Engineering	<ul style="list-style-type: none">a. Land & Water Use & Developmentb. Power Machinery & Equipmentc. Farm Structures & Materials
4	Animal Husbandry	<ul style="list-style-type: none">a. Beef Cattleb. Sheep & Goatsc. Swine
5	Dairy Husbandry	Dairy Cattle
6	Dairy Technology	Dairy Technology
7	Entomology & Economic Zoology	<ul style="list-style-type: none">a. Field Crop Insectsb. Fruit, Nut & Vegetable Insectsc. Miscellaneous Insects & Economic Zoologyd. Insecticides
8	Field Crops	<ul style="list-style-type: none">a. Cereal Cropsb. Oil, Fiber, Tobacco & Sugar Crops
9	Food Science & Technology	<ul style="list-style-type: none">a. Food Chemistry, Microbiology, Sanitation & Public Healthb. Food Engineering, Processing, Product and Process Development, Utilization and Waste Disposalc. Food Quality & Standards, Acceptance, Preference, & Marketing
10	Forage Crops, Pastures & Ranges	Forage Crops, Pastures & Ranges
11	Forestry	Forestry

ARS-23-8:	:	
Part :	Subject-Matter Area	Title of Section
Numbers :	:	
12	Fruits & Nuts	Fruits & Nuts
13	Home Economics	<ul style="list-style-type: none"> a. Human Nutrition b. Housing c. Clothing & Textiles d. Foods-Consumer Quality & Utilization e. Household Economics & Management
14	Economics of Marketing	<ul style="list-style-type: none"> a. Field Crops b. Fruits & Vegetables c. Livestock, Meats & Wool d. Dairy Products e. Poultry & Poultry Products f. Forest Products & Ornamental & Drug Plants g. Cross-Commodity & Functional Studies
15	Meteorology	Meteorology
16	Ornamental & Drug Plants	Ornamental & Drug Plants
17	Plant Pathology & Bacteriology	<ul style="list-style-type: none"> a. Plant Pathology, Botany, & Diseases of Miscellaneous Crops b. Diseases of Field Crops c. Diseases of Fruit Crops d. Diseases of Vegetable Crops
18	Plant Physiology & Nutrition	Plant Physiology & Nutrition
19	Poultry Industry	Poultry Industry
20	Rural Sociology	Rural Life Studies
21	Soils	<ul style="list-style-type: none"> a. Soil Chemistry & Microbiology b. Soil Fertility, Management & Soil-Plant Relationships c. Soil Physical Properties, Conservation & Classification
22	Vegetables	<ul style="list-style-type: none"> a. Vegetable Crops b. Potatoes
23	Veterinary Science	Veterinary Science
24	Weeds	Weed Control

